CLAIMS

What is claimed is:

1. A method of screening a subject having or at risk of having a neurological disorder comprising, analyzing a tissue sample from the subject to determine the presence of a neurotoxic amino acid or neurotoxic derivative thereof associated with the neurological disorder.

2. The method of Claim 1, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

3. The method of Claim 2, wherein the glutamate receptor agonist is a methylated alanine.

4. The method of Claim 3, wherein the methylated alanine is β-N-methylamino-L-alanine (BMAA).

5. The method of Claim 4, wherein protein-bound BMAA is analyzed.

6. The method of Claim 5, wherein free BMAA is also analyzed.

7. The method of Claim 1, wherein the subject has symptoms of a neurological disorder.

8. The method of Claim 1, wherein the subject is asymptomatic for a neurological disorder.

9. The method of Claim 1, wherein the subject has been identified as being at risk for developing a neurological disorder.

10. The method of Claim 1, wherein the presence of a detectable level of a neurotoxic amino acid or neurotoxic derivative thereof indicates a neurological disorder.

11. The method of Claim 1, wherein the neurological disorder is a neurofibrillary tangle disorder (NFT disorder).

12. The method of Claim 11, wherein the neurological disorder is amyotrophic lateral sclerosis-Parkinsonism dementia complex (ALS-PDC).

13. The method of Claim 11, wherein the neurological disorder is Alzheimer's disease.

14. The method of Claim 11, wherein the neurological disorder is progressive supranuclear palsy.

15. The method of Claim 1, wherein the neurological disorder is a movement disorder.

16. The method of Claim 15, wherein the movement disorder is Parkinson's disease.

17. The method of Claim 1, wherein the neurological disorder is a motor neuron disease.

18. The method of Claim 17, wherein the motor neuron disease is amyotrophic lateral sclerosis (ALS).

19. The method of Claim 1, wherein the screening method predicts the likelihood of developing a neurological disease.

20. The method of Claim 19, further wherein the method predicts the latency period prior to onset of the neurological disorder.

21. The method of Claim 1, wherein the screening method predicts the severity of the neurological disorder.

22. The method of Claim 1, wherein the tissue sample is neurological tissue.

23. The method of Claim 22, wherein the neurological tissue is associated with the central nervous system (CNS).

24. The method of Claim 23, wherein the tissue is brain tissue.

25. The method of Claim 23, wherein the tissue is cerebral-spinal fluid (CSF).

26. The method of Claim 22, wherein the neurological tissue is associated with the peripheral nervous system (PNS).

28. The method of Claim 1, wherein the tissue is non-neurological tissue.

29. The method of Claim 28, wherein the tissue is keratinous tissue.

30. The method of Claim 29, wherein the tissue is hair.

31. The method of Claim 29, wherein the tissue is skin.

32. The method of Claim 29, wherein the tissue is nail.

33. The method of Claim 32, wherein the nail is a fingernail.

34. The method of Claim 32, wherein the nail is a toenail.

35. The method of Claim 29, wherein the tissue is a feather.

36. The method of Claim 29, wherein the tissue is a claw.

37. The method of Claim 29, wherein the tissue is a hoof.

38. The method of Claim 29, wherein the tissue is a horn.

39. The method of Claim 28, wherein the tissue is non-keratinous tissue.

40. The method of Claim 39, wherein the tissue is blood.

41. The method of Claim 40, wherein the tissue is serum.

42. The method of Claim 39, wherein the tissue is saliva.

43. The method of Claim 39, wherein the tissue is urine.

44. A method for screening an environmental sample to determine if the environmental sample is associated with a neurological disorder, comprising analyzing the

environmental sample to determine the presence of a neurotoxic amino acid or neurotoxic derivative thereof associated with the neurological disorder.

45. The method of Claim 44, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

46. The method of Claim 45, wherein the glutamate receptor agonist is a methylated alanine.

47. The method of Claim 46, wherein the methylated alanine is BMAA.

48. The method of Claim 44, wherein the environmental sample is water.

49. The method of Claim 44, wherein the environmental sample is a food item.

50. A method for screening an environmental sample to determine if the sample is associated with a neurological disorder, comprising detecting cyanobacteria producing a neurotoxic amino acid or neurotoxic derivative thereof, in the environmental sample.

51. The method of Claim 50, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

52. The method of Claim 51, wherein the glutamate receptor agonist is a methylated alanine.

53. The method of Claim 52, wherein the methylated alanine is BMAA.

54. The method of Claim 50, wherein the cyanobacteria are from the genus *Nostoc*.

55. The method of Claim 50, wherein the cyanobacteria are from the genus *Anabena*.

56. The method of Claim 50, wherein the environmental sample is water.

57. The method of Claim 50, wherein the environmental sample is a food item.

58. A method for inhibiting a neurological disorder in a subject comprising reducing levels of a neurotoxic amino acid or neurotoxic derivative thereof associated with the neurological disorder.

59. The method of Claim 58, wherein the neurotoxic amino acid or neurotoxic derivative thereof is released from an endogenous reservoir in the subject.

60. The method of Claim 59, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

61. The method of Claim 60, wherein the glutamate receptor agonist is a methylated alanine.

62. The method of Claim 61, wherein the methylated alanine is BMAA.

63. A method for inhibiting a neurological disorder in a subject comprising increasing the cellular concentration of a neuroprotectant compound that blocks interaction of a neurotoxic amino acid or neurotoxic derivative thereof associated with the neurological disorder with a target molecule.

64. The method of Claim 63, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

65. The method of Claim 64, wherein the glutamate receptor agonist is a methylated alanine.

66. The method of Claim 65, wherein the methylated alanine is BMAA.

67. The method of Claim 63, wherein the neuroprotectant compound is glutamic acid.

68. The method of Claim 63, further comprising administration of a neurotoxic amino acid or neurotoxic derivative thereof binding agent.

69. The method of Claim 63, further comprising administration of a chelating agent.

70. A kit for screening a subject having or at risk of having a neurological disorder comprising a means for analyzing the tissue sample to determine the presence of a neurotoxic amino acid or neurotoxic derivative thereof associated with the neurological disorder.

71. The kit of Claim 70, wherein the neurotoxic amino acid or neurotoxic derivative thereof is a glutamate receptor agonist.

72. The kit of Claim 71, wherein the glutamate receptor agonist is a methylated alanine.

73. The kit of Claim 72, wherein the methylated alanine is BMAA.

74. The kit of Claim 70, wherein protein-bound BMAA is determined.

75. The kit of Claim 70, wherein free BMAA is determined.

76. The kit of Claim 70, further comprising samples of the neurotoxic amino acid or neurotoxic derivative thereof for use as a control.